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EGYPT'S OIL & GAS

# MODERNIZATION PROJECT SUMMARY 2023



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A satellite night view of the Earth, showing the glowing lights of cities and continents against the dark background of space. The horizon of the Earth is visible at the top.

# — Introduction

Egypt has always been keen to develop and modernize its oil and gas sector as it is considered one of the most dynamic economic sectors. Thus, to ensure the sustainability of the sector's achievements, unlock its full potential, and enhance its contribution to the Egyptian economy, the Ministry of Petroleum and Mineral Resources (MoPMR), in 2016, successfully launched a Modernization Project for the oil and gas sector, with a comprehensive sustainability strategy. The primary goal of the project is to boost the contribution of the sector to Egypt's economic growth.

The Modernization Project has two phases: diagnostic and implementation. The diagnostic phase includes engaging with a leading consultant, working on data collection, interviews, and workshops, and outlining a SWOT analysis to identify the industry's main challenges. On the other hand, the implementation phase includes establishing priorities, supporting and allocating resources, approving key decisions related to the project's pillars, approving policies.

Since the project's inception, the sector has been able to achieve tangible results in various petroleum activities which had positive repercussions at the local, regional, and global levels.

In summary, the completion of the project's pillars enabled Egypt to establish stronger partnerships with neighboring countries and international stakeholders, positioning itself as a strategic energy hub for the region, enhancing cooperation, attracting investments, and promoting sustainable development, thereby ensuring a prosperous future for Egypt.

In this context, this report highlights the progress, the latest developments, and the achievements of the Modernization Project, across its seven pillars.



## Modernization Project 7 Pillars



Upstream Investment  
Attraction



Sector Structure Reform



Human Resources  
Management (HRM)



Downstream Performance &  
Energy Efficiency



Upstream Performance



Oil & Gas Hub Strategy



Digital Transformation

# Modernization Project Pillars

The process of modernizing the oil and gas sector is to come up with a unified and clear vision that comprises seven pillars.

## 1. Upstream Investment Attraction

The developments proposed by the Modernization Project would not be reachable without continuous efforts to attract more investments. This crucial role led the ministry to dedicate a whole pillar within the modernization strategy for investment attraction. It aims at developing an attractive environment for foreign investment, reducing bid round cycles & improving evaluation efficiency, streamlining current bid round processes, improving the current Model Agreement.

The MoPMR's vision to attract investment to exploration and exploitation projects was the main reason behind launching Egypt's Upstream Gateway (EUG). EUG was launched in 2021 as the first global digital platform that provides a gateway to promising investment opportunities in the Egyptian oil and gas sector.

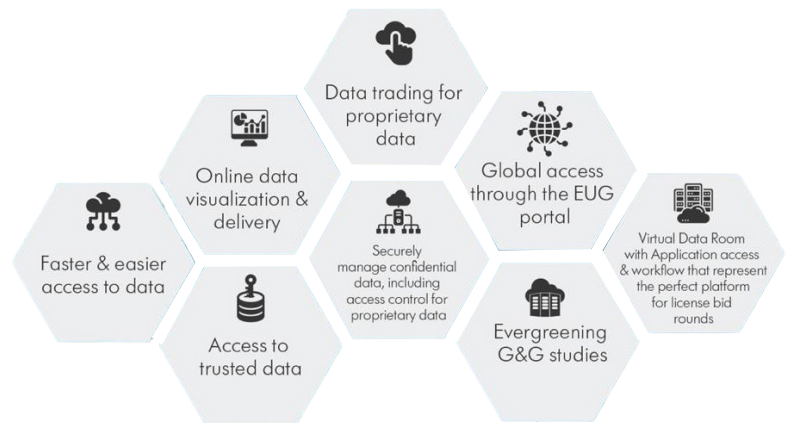
EUG plays a crucial role in attracting more investments through the implementation of regional seismic survey projects. It has also contributed to facilitating the acquisition of available technical data for exploration and production, providing opportunities for research and exploration of new areas, developing bid round systems, simplifying the procedures followed, and shortening the periods for signing agreements.







## EUG's Services



## EUG Highlights



**2021**

Launching Date



**40 companies**

Current Members



**5**

Total Bid Rounds



**16**

Signed Agreements  
in 2023

## DIGITAL CENTERS

Number  
**2**

Cost  
**\$7.5**  
million

## 1<sup>ST</sup> BID ROUND

Blocks  
**24**

Mediterranean  
Sea &  
Western Desert

## 2. Sector Structure Reform

The sector structure reform is a pillar whose benefits extend far to the other pillars. Through the structure reform, the MoPMR expects to create a more agile sector and demarcate roles for more efficient decisions. It aims to streamline the oil and gas sector by eliminating duplication of roles and overlapping competencies, and by improving and developing governance systems and standards, as well as reviewing and developing the current organizational structure of the sector.

### Successful Models for Structural Reform



The MoPMR has restructured some sector companies to keep up with any changes and challenges in line with the state's economic reform policies. With this regard, the ministry took several procedures for entities' mergers and acquisitions processes, in addition to creating new units within the sector's organizational structure.

For instance, Cairo Gas, Sinai Gas, and Regions Gas (REGAS) companies were merged as one entity under the heading of Modern Gas Company for optimal exploitation of resources and assets. Khalda Petroleum and Qarun Petroleum Companies also were merged as a new entity under the umbrella of Khalda with high productive capacity to bring more investment.

Moreover, Enppi has acquired the Oil & Gas Skills company which creates a strong entity to conduct training within the oil and gas sector through Enppi.

New units/departments have been introduced within the organizational structures of the holding companies, and subsidiaries in different fields e.g. process safety, CSR, Energy Efficiency.

### Process Safety Jobs

Great efforts were put into the process safety jobs field that revolved around developing an organizational structure and job descriptions for new process safety management functions, tailored to the nature of the activity, business volume, employment levels, and operational risks in each entity. This is in addition to creating determinants and controls based on transparency and equal opportunities, considering academic qualifications, technical specializations, approved specialized certificates, and practical experience.

### Corporate Social Responsibility (CSR)

The role of the MoPMR is not limited to ensuring reliable energy supplies but extends to developing society through contributing to achieving economic and sustainable development and improving living conditions. A unified strategy for social responsibility has been prepared for national and foreign petroleum companies, as well as a guide to defining roles and responsibilities.

The implementation of CSR in the oil and gas sector is based on four pillars:



### CSR Implementation Pillars



EDUCATION, TRAINING & ECONOMIC DEVELOPMENT



HEALTH, GENDER EQUALITY



ENVIRONMENTAL PROTECTION PROJECTS



PARTICIPATING IN PRESIDENTIAL INITIATIVES

### Main Successful Projects



Supporting:

- People who were affected by floods in Aswan which destroyed more than 300 houses
- Alexandria Children's Cancer Hospital



Providing:

- Medical devices at Ahl Masr Hospital
- Small and micro-enterprises in many villages



Helping:

- Ras Gharib Experimental School in the Red Sea became the first green school after its reconstruction



Contributing:

- To the establishment of applied technology schools in Damietta, Matrouh, and Burj Al-Arab



## Major IOCs Participating in CSR Projects



## 3. Human Resources Management (HRM)

The MoPMR gives priority to developing and improving human efficiency to maximize its benefits. It has developed modern systems for managing human resources and utilizes trained cadres as agents of change and development. Efficiency is the primary determinant for evaluation in the sector.

The MoPMR has designed various capacity-building programs to include all companies in the Egyptian oil and gas sector, providing equal opportunities, achieving governance standards, and creating effective participation. These programs were designed using modern and diverse evaluation methods and tools to ensure transparency and selection of competencies to support new specializations.

### Capacity Building Programs

01. Middle Management Development Program
02. Process Safety Capacity Building Program
03. Energy Efficiency Capacity Building Program
04. Executive Leadership Program (ELP)
05. Potential Leadership Program (PLP)



## 4. Downstream Performance & Energy Efficiency

### Refining & Production Activities Improvement

The MoPMR has managed to improve the downstream performance and increase energy efficiency, through developing the production and distribution of petroleum, gas, and petrochemical products. Hence, the efficiency of energy consumption was improved, which led to cost reductions in refineries.

### Main Achievements

Five projects are being implemented with a total investment of about \$7 billion.

01. Expansions of Middle East Oil Refinery (MIDOR)
02. Diesel Production Complex of Assiut National Oil Processing Company (ANOPC)
03. Expansions of the Suez Oil Processing Company (SOPC)
04. Establishing Condensate Distillation Unit of the Nasr Petroleum Company (NPC)
05. Building Atmospheric Distillation Unit of Assiut Oil Refining Company (ASORC)

**Executed Projects**  
**8**

**Total Investment Cost**  
**EGP~89.5 billion**



### Upgrading Crude Oil & Petroleum Products Storage Capacities

The MoPMR has prepared an integrated plan to establish new storage tanks for crude oil and petroleum products aiming at providing a strategic stock to ensure feeding refineries, as well as meeting all consumption needs for petroleum products.

### New Traded Petroleum Products' Storage Capacities

 **To 2.5 billion tons**

### Developing the Infrastructure of Crude Oil and Petroleum Products and gas Transport pipelines

#### Constructing/Replacing and Renewing pipelines\*

About  
**2735 km**  
**Total Length**



**EGP 28 billion**  
**Total Cost**

\*For Crude Oil, Petroleum Products and Natural Gas

## Energy Efficiency

The MoPMR has evaluated the progress of enhancing energy efficiency and has identified obstacles and challenges that hamper these efforts in the sector. Moreover, an action plan was adopted which includes goals for improving energy efficiency over a short- and long-term period.

### Main Achievements

- Establishing a new department for energy efficiency within the sector.
- Implementing specialized training programs.
- Establishing an integrated database to monitor performance.
- Implementing 247 low and medium-cost measures and projects, saving around \$115 million and reducing 0.9 million equivalent tons of carbon dioxide emissions annually.
- Preparing the methodology of "Technical Review of Energy Efficiency" in cooperation with the European Union (EU).
- A fund of \$390 million was provided by the European Bank for Reconstruction and Development (EBRD) to improve energy efficiency at the Suez Oil Processing Company (SOPC) and the Egyptian Natural Gas Company (GASCO).
- A waste heat recovery project in Gasco which is the first project to utilize Organic Rankin Cycle at a cost of \$140 million, saving 1963 thousand MMBTU (million British thermal units) annually, and reducing the operations CO2 emissions with 123 thousand tons of carbon dioxide equivalent annually.
- Implementing a project to improve combustion efficiency at Cairo Oil Refining Company (CORG) by about 10%.

### Future Plans

- The establishment of the Center of Excellence in cooperation with the Japan International Cooperation Agency's (JICA) projects.
- Coordination with the EU and the EBRD to implement several related capacity-building programs during 2024
- Cooperation with the EU and EBRD to conduct a technical and economic feasibility study for executing electrical interconnection projects and generating electricity from renewables
- Establishing a sustainable green financing mechanism to implement green projects is under study



## Sector's Energy Transition & Emissions Reduction Program

### Main Pillars

#### 01

##### REFORMING ENERGY SUBSIDIES

Applying social protection measures and developing related sectors, such as public transport and railways.

#### 02

##### EXPANDING THE USE OF NATURAL GAS

This is being accomplished through attracting investments in research and exploration fields as well as maximizing Egypt's role as a regional energy hub. Furthermore, expanding the use of gas as a substitute for diesel in generating electricity, vehicles, houses, and work sites while raising the efficiency of energy use.

## 03

### ENERGY EFFICIENCY IMPROVEMENT ACTIVITIES

The oil and gas sector announced the Energy Efficiency Strategy (2022-2035) during COP27. It aims to support the economic improvement of energy efficiency activities in the sector and contribute to supporting energy security and reducing emissions. The strategy is divided into two phases: the first phase (2022-2027) targets saving 10% in energy consumption by 2027, while the second phase (2025-2035) aims to save 18% of energy consumption by 2035.

## 04

### SUPPORTING CARBON EMISSIONS REDUCTION PROJECTS

#### Reducing Carbon Emissions

- The MoPMR, in cooperation with the World Bank (WB), prepared a roadmap for the decarbonization of petroleum sector activities. Moreover, a strategy to reduce carbon emissions in the oil and gas sector is being finalized. The MoPMR is also preparing a study to establish carbon capture and storage centers in Egypt in cooperation with the WB.

#### Recovery and Exploitation Projects of Associated Petroleum Gases and Flare Gases

- The ministry formed a specialized committee to develop strategies, policies, and action plans for exploiting associated petroleum gases, as well as reviewing the legal and regulatory framework to limit their burning. It also cooperated with the WB and the EBRD to prepare a study on the exploitation of associated petroleum gasses through the Global Gas Flaring Reduction Partnership (GGFR), to measure, monitor, and report on the quantities of flare gasses at production sites.

#### Ongoing Gas Flaring Recovery Projects



#### COMPANIES

NPC, APC, GPC, APRC, CORC, Khalda, WEPCO, AMAPETCO, Agiba, NORPETCO, Petrosilah, PetroSannan.

#### Methane Emissions

- The MoPMR implemented two campaigns to measure methane emissions and volatile petroleum compounds in coordination with the EBRD. The ministry also worked on identifying the most important sources of methane emissions in gas companies. A model framework for a roadmap to reduce methane emissions in the oil and gas industry was also prepared in cooperation with the Global Methane Hub (GMH). Currently, the ministry is working on preparing a detailed roadmap to contribute to reaching the collective goal of the Global Methane Pledge to achieve a reduction of 30% in 2030 compared to 2020 levels.

#### Implemented Gas Flaring Recovery Projects



**\$165 million**  
Annual Savings

**1.4 mmt equivalent**  
Annual CO<sub>2</sub> Emissions Reduction



TARGETED  
RECOVERED GASES

**25 mmcf/d**



TARGETED CO<sub>2</sub>  
EMISSIONS REDUCTION

**584,000 t**

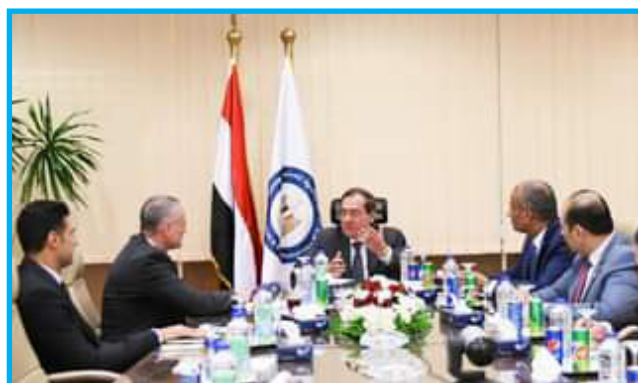


## 05

### EXPANDING THE PRODUCTION OF RENEWABLE ENERGY AND GREEN PETROCHEMICALS

#### Using Renewable Energies in Oil & Gas Sites

##### Implemented Renewables Application Projects



##### Green Petrochemical Under Development Projects

PROJECT	ANNUAL PRODUCTION CAPACITY	ESTIMATED COST (\$ MILLION)	EXPECTED EMISSIONS REDUCTION (MMT/Y OF CO <sub>2</sub> )
Biodegradable Plastic Production	75,000 t	600	1.2
Bioethanol Production from Sugar Beet Molasses	100,000 t	120	0.3
Medium Density Fiberboard (MDF) Production from Rice Straw	205,000 m <sup>3</sup>	300	0.4
Sustainable Aviation Fuel (SAF) Production	120,000 t	200	0.2
<b>Total</b>	<b>-</b>	<b>\$1.2 billion</b>	<b>2.1</b>

## 06

### PRODUCING LOW-CARBON HYDROGEN AND ITS DERIVATIVES

The ministry signed a joint declaration of intent (JDOI) with Germany for cooperation in the field of green hydrogen. Moreover, the national strategy for hydrogen production is being finalized, which aims to exploit Egypt's competitive capabilities to reach 8% of the global hydrogen market.





## Signed Agreements with International Companies

### Green Ammonia and Green Hydrogen Production Project

#### PARTNERS

ECHEM  
MOPCO  
Norwegian SCATEC

#### OBJECTIVE

Producing green ammonia from green hydrogen in MOPCO's facilities

#### INVESTMENT

**\$880** million

### Green Methanol Production Project



Partners  
**ANRPC & SCATEC**



#### Objective

Producing green methanol, it is the first project of its kind in Egypt and the Middle East



Production Capacity  
**40,000-200,000 t**



Total Investment  
**\$450 million-\$2 billion**





## Decarbonization Day

The MoPMR organized Decarbonization Day as part of COP27, during which eight sessions were held to review the efforts and plans of the oil and gas industry stakeholders in reducing emissions and accelerating the energy transition.

### Major Outcome:

- Announcing the energy efficiency strategy in the sector (2022-2035)
- Sharm El Sheikh road map to reduce methane emissions from the petroleum sector
- Eastern Mediterranean Gas Forum (EMGF) Decarbonization Initiative
- Confirming the support of US financing institutions to implement carbon reduction projects

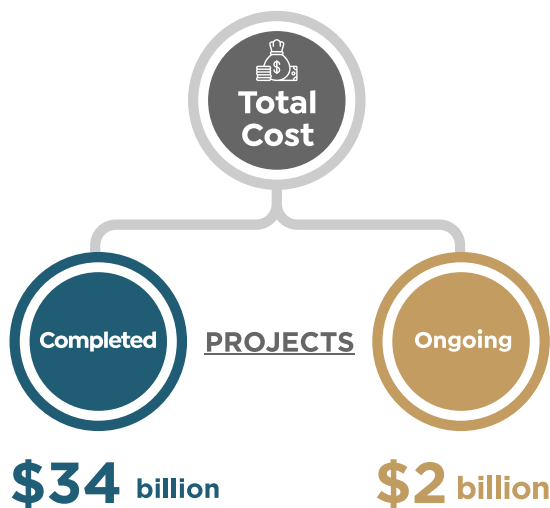
Furthermore, the ministry held more than 20 bilateral meetings with many ministers, heads of international companies, and leaders from global and regional energy institutions and organizations. In light of the Ministry's participation, it signed several memorandums of understanding (MoUs) in energy transition, decarbonization, and hydrogen production with major international companies including Siemens, Microsoft, Shell, General Electric, Toyota Tsusho, High Rock, Total Energies, Sea Split, and General Electric.

## 5. Upstream Performance

### Enhancing Production Activities

The MoPMR identified opportunities to increase production from existing fields, while reducing costs and expanding the use of new technologies. This resulted in increased production efficiency in companies, raised field productivity, and enhanced cooperation between companies to achieve efficient operations and optimal resource utilization.

### Field Development Achievements



## 6. Oil & Gas Hub Strategy

Under the vision and strategy of Egypt 2030, the ongoing development and modernization of the petroleum sector have successfully positioned Egypt as a regional hub for the trade and handling of petroleum and natural gas. Drawing from international experiences, Egypt has implemented strategic plans to establish its markets as global energy trading centers and attract investment.

Leveraging its strategic geographical location and robust infrastructure, including gas liquefaction facilities, floating exchange units, and expansive transmission and distribution networks, Egypt has facilitated the flow of gas from the Eastern Mediterranean fields to its shores since January 2020.

To achieve the strategic goal of transforming Egypt into a regional energy hub, several key measures have been undertaken:

- 1- Establishment of the Gas Regulatory Authority (GASREG) to ensure transparency and efficiency in the gas market.
- 2- Formation of the EMGF, promoting collaboration among gas-producing, importing, and transit countries in the Eastern Mediterranean.
- 3- Launch of the Egypt Petroleum Show (EGYPS) as a global platform to showcase investment opportunities in the oil and gas sector, evolving into the Egypt Energy Show (EGYPES) in 2024
- 4- Signing a government agreement with Cyprus to establish a sea gas pipeline, connecting the Aphrodite field to the Egyptian liquefaction plants, enhancing regional energy cooperation and export potential.
- 5- Implementation of projects to improve refinery efficiency and enhance storage, transportation, trading, and distribution systems for petroleum products.
- 6- Development of an integrated plan to establish new petroleum ports, with an investment of EGP 15.2 billion. These ports will handle a significant annual trading volume, expanding Egypt's specialized oil ports to 14, along with two liquefied natural gas (LNG) export ports.

## 7. Digital Transformation

Egypt's oil and gas sector is undergoing a comprehensive digital transformation plan to improve decision-making and crisis management. The plan aims to establish a unified network connecting the Egyptian General Petroleum Corporation (EGPC), holding companies, and subsidiaries. Integration with existing industrial control systems will ensure seamless coordination across petroleum, natural gas, and petrochemical activities. A unified system adhering to international standards will be developed to maintain data accuracy and integrity.

### Digital Transformation Efforts

01

EGPC Surplus  
Marketing Website

02

The first  
mobile application  
(MOP Stations)

03

The Enterprise  
Resource Planning  
(ERP)

Digital transformation projects encompass a range of initiatives aimed at enhancing control and monitoring of raw material and petroleum product trading.

### These projects include:

- Implementation of the Supervisory Control and Data Acquisition (SCADA) system at Petrogas sites to enhance oversight of gasoline trading.
- Establishment of an automatic tank gauge (ATG) system at marketing stations for a comprehensive view of the fuel trading process.
- Implementation of a radar tank gauging (RTG) system in petroleum sector warehouses for tank monitoring. Integration with MoPMR and EGPC will enhance accuracy and streamline operations.
- Establishment of the National Energy Control Center (NECC) to oversee transportation lines for crude oil and petroleum products. It will develop a system for early violation detection and leak identification, ensuring infrastructure integrity and safety.





# Conclusion

Egypt's Oil and Gas Modernization Project has made significant strides in driving economic growth, enhancing infrastructure, and fostering innovation. Through various initiatives and reforms, the country has embarked on a comprehensive journey of transformation across sectors such as transportation, energy, education, and digital technology. These efforts have not only attracted domestic and foreign investments but also generated job opportunities and improved the quality of life for Egyptian citizens.

As the Modernization Project continues to unfold, it is expected to further accelerate economic growth, attract investments, and improve the overall well-being of its population. By embracing technology, sustainability, and human capital development, Egypt is positioning itself as a dynamic and competitive player on the global stage. Under the umbrella of the Modernization Project, the sector strives for a decarbonized future with the indispensable support of digital transformation tools and techniques.



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